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10/081,152	02/25/2002	Anders Terje Brandt		9187

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EXAMINER
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LEE, ANDREW CHUNG CHEUNG

ART UNIT	PAPER NUMBER
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2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/05/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/081,152

Applicant(s)

BRANDT ET AL.

Examiner

Andrew C. Lee

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Response to Amendment***

1. Claims 1 – 18 are pending.
2. Claim 19 had been canceled.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 10, 2, 11, 3, 12, 4, 13, 5, 14, 6, 15, 7, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amou et al. (US 6895012 B1) in view of Kawai et al. (US 7016366 B2).

Regarding claims 1, 10, Amou et al. disclose the limitation of a method and an apparatus of transmitting information units or packets from a plurality of queues into a single transmission medium ("the packet scheduling apparatus is provided with a queue set comprising a plurality of queues on its input side and has an output side connected to the output link" correlates to transmitting information units or packets from a plurality of queues into a single transmission medium; Fig. 3, column 5, lines 12 – 15), wherein the units or packets may have different sizes ("a weight proportional to the bandwidth reserved for the queue is set for the queue", "a variable  $F_i$  of each queue is computed, where  $F_i$  is the service finish time" correlates to the units or packets may have different sizes; column 2, lines 7 – 11, lines 15 – 29), the method comprising: a bandwidth

guaranteeing process transferring units or packets from one or more queues to the transmission medium in a manner so that each of those queues can obtain at least a predetermined bandwidth ("the queue set includes bandwidth guaranteed queues, and by setting the weights of each of the bandwidth guarantee queues" correlates to bandwidth guaranteeing process transferring units or packets from one or more queues to the transmission medium in a manner so that each of those queues can obtain at least a predetermined bandwidth; Fig. 3, element 13, column 5, lines 16 – 22, lines 33 – 59), and a queuing process (Fig. 8) comprising the steps of: 1. assigning a priority or quality to each of the queues not using the bandwidth guaranteeing process; ("the means sets type\_<sub>l</sub>=1 when the flow for preferential control is assigned to the queue l" correlates to assigning a priority or quality to each of the queues; Fig. 7, Fig. 9, element 21, priority queue selecting, column 10, lines 21 – 34, lines 64 – 67, column 11, line 1), 2. defining, for each of the queues, not using the bandwidth guaranteeing process, a variable ("the weight  $\Phi_p$  of the overall priority queue class" correlates to defining, for each of the queues, not using the bandwidth guaranteeing process, a variable; Fig. 7, Fig. 9, column 5, lines 55 – 57, column 10, lines 49 – 51), and 3. when no queues transmit units or packets using the bandwidth guaranteeing process (no queues transmit packet using the bandwidth guaranteeing process is interpreted as some or other queues transmit packet using bandwidth non-guaranteeing process, such as preferential controlled queues. Hence, "when all of the priority queues of the priority queue class are empty" correlates to when no queues transmit units or packets using the bandwidth guaranteeing process; column 7, lines 54 – 60): determining a first queue having a variable with a value fulfilling

a predetermined criterion ("the smaller the value of  $pri_i$ " correlates to a queue having a variable (interpreted as the value of  $pri_i$ ) with a value fulfilling a predetermined criterion (interpreted as higher the priority); column 12, lines 39 – 42), transmitting a packet or unit from the first queue to the transmission medium ("this queue  $i$  is selected and  $select=1$  is output from the selecting means" correlates to transmitting a packet or unit from the first queue to the transmission medium; column 12, lines 54 – 58), and determining a new value for the variable of the first queue ("this queue  $i$  is selected and  $select=0$  is output from the selecting means" correlates to determining a new value for the variable of the first queue; column 12, lines 54 – 58), the new value relating to a mathematical operation using a previous value for the variable at a point in time prior to transmission of the packet or unit and a factor scaling with/relating to the priority or quality of the first queue multiplied with a factor relating to a size of the packet or unit transmitted from the first queue and/or a period of time used for transmitting the packet or unit ("computes the service time  $F_i$  of the queue  $i$ , stores  $F_i$  after this computation in the memory" correlates to determining a new value for the variable of the queue, the new value relating to a value for the variable at a point in time prior to transmission of the packet or unit plus a factor scaling with/relating to the priority or quality of the queue multiplied with a factor relating to a size of the packet or unit transmitted from the queue and/or a period of time used for transmitting the packet or unit; column 6, lines 35 – 50, column 8, lines 1 – 52), where the mathematical operation brings the new value to, compared to the previous value, not fulfill the predetermined criterion (Fig. 10, Fig. 11, column 12, lines 25 – 58). Although Amou et al. disclose implicitly the limitation of wherein the units or packets may

have different sizes ("a variable  $F_i$  of each queue is computed" correlates to the units or packets may have different sizes; column 2, lines 15 – 29),

Kawarai et al. disclose the limitation of wherein the units or packets may have different sizes ("queues provided in a number equal to the number of QoS classes that can be designated, for registering variable-length packets according to the QoS classes" correlates to packets may have different sizes; Fig. 1, column 3, lines 51 – 67, column 7, lines 40 – 52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Amou et al. to include wherein the units or packets may have different sizes as taught by Kawarai et al. in order to provide packet switch for carrying out routing of a variable-length packet (or a frame) like an IP (Internet Protocol) packet, particularly, a large-capacity packet switch for achieving complex controls such as QoS (Quality of Service) control, drop control and multicast control of a variable-length packet (as suggested by Kawarai et al., see column 1, lines 9 – 14).

Regarding claims 2, 11, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein step 3 comprises: when no queues transmit units or packets using the bandwidth guaranteeing process (no queues transmit packet using the bandwidth guaranteeing process is interpreted as some or other queues transmit packet using bandwidth non-guaranteeing process, such as preferential controlled queues. Hence, "when all of the priority queues of the priority queue class are empty" correlates to when no queues transmit units or packets using the bandwidth guaranteeing

process; column 7, lines 54 – 60); determining a first queue having data and having a variable with a smallest value (“the smaller the value of  $pri\_i$ ” correlates to a queue having data and having a variable with a smallest value; column 12, lines 39 – 42), transmitting a packet or unit from the first queue to the transmission medium (“this queue  $i$  is selected and  $select=1$  is output from the selecting means” correlates to transmitting a packet or unit from that queue to the transmission medium; column 12, lines 54 – 58), and determining a new value for the variable of the first queue, the new value relating to a value for the variable at a point in time prior to transmission of the packet or unit plus a factor scaling with/relating to the priority or quality of the first queue multiplied with a factor relating to a size of the packet or unit transmitted from the first queue and/or a period of time used for transmitting the packet or unit (“computes the service time  $F_i$  of the queue  $i$ , stores  $F_i$  after this computation in the memory” correlates to determining a new value for the variable of the first queue, the new value relating to a value for the variable at a point in time prior to transmission of the packet or unit plus a factor scaling with/relating to the priority or quality of the first queue multiplied with a factor relating to a size of the packet or unit transmitted from the first queue and/or a period of time used for transmitting the packet or unit; column 6, lines 35 – 50, column 8, lines 1 – 52).

Regarding claims 3, 12, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein the step of transmitting the data packet or unit comprises transmitting the packet or unit in accordance with a periodic timing signal (“the magnitudes of the computed service times with each other and selects the packet having

the minimum service time as the packet to be output first” correlates to transmitting the data packet or unit comprises transmitting the packet or unit in accordance with a periodic timing signal; column 4, lines 61 – 64) and wherein the step of determining the new value for the first queue comprises; during transmission and for each period of the timing signal, providing a new value for the variable by performing the predetermined mathematical operation on a previous variable value and a factor scaling with the priority or quality of the first queue (“computes the service time  $F_i$  of the queue  $i$ , stores  $F_i$  after this computation in the memory” as determining the new value for the queue comprises, during transmission and for each period of the timing signal, providing a new value for the variable by performing the predetermined mathematical operation on a previous variable value; column 6, lines 35 – 50, column 8, lines 1 – 52).

Regarding claims 4, 13, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein step 3 is adapted to be stopped, with a first set of values, when a packet or unit has been transmitted and a queue wishes to transmit a packet or unit, so that the queue can obtain at least a predetermined bandwidth, and to be resumed with a second set of values each corresponding to a value of the first set of values, when none of the queues of wishes to transmit a packet or unit using the bandwidth guaranteeing process (column 14, lines 40 – 65).

Regarding claims 5, 14, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein step 3 comprises the step of altering the variables



of the queues in accordance with a predetermined relationship ("the weight  $\Phi_i$  of each bandwidth guaranteed queue  $i$  and the weight  $\Phi_p$  of the priority queue class are found according to equations (4) and (5)" correlates to step of altering the variables of the queues in accordance with a predetermined relationship; Fig. 4, column 7, lines 15 – 34).

Regarding claims 6, 15, Amou et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of determining a bandwidth used for at least one of the queues ("the reserved bandwidth  $W_p$  of the priority queue class" correlates to step of determining a bandwidth used for at least one of the queues; column 5, lines 33 – 43).

Regarding claims 7, 16, Amou et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of altering, on the basis of the bandwidth used by a queue, a parameter of the bandwidth guaranteeing process for the queue and/or the priority/scaling of the step of determining a new value for the queue ("a plurality of bandwidth guaranteed queues having reserved bandwidths guaranteed and queues of a priority queues to be preferentially controlled with priority orders" correlates to step of altering, on the basis of the bandwidth used by a queue, a parameter of the bandwidth guaranteeing process for the queue and/or the priority/scaling of the step of determining a new value for the queue; Fig. 1, column 4, lines 22 – 48).

Regarding claims 9, 18, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein the step of defining the variable comprises defining an integer value relating to a priority or quality of each queue ("i = 1, for a selected priority queue and i=0 for an unselected priority queue" correlates to defining an integer value relating to a priority; column 11, lines 47 – 57).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amou et al. (US 6895012 B1) and Kawarai et al. (US 7016366 B2) as applied to claims 1, 10, 2, 11, 3, 12, 4, 13, 5, 14, 6, 15, 7, 16 above, and further in view of Ennis Jr. et al. (US 5867483).

Regarding claims 8, 17, Amou et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of determining a bandwidth used for at least one of the queues ("the packet scheduling apparatus is provided with a queue set comprising a plurality of queues on its input side and has an output side connected to the output link" correlates to transmitting information units or packets from a plurality of queues into a single transmission medium; Fig. 3, column 5, lines 12 – 15).

Amou et al. do and Kawai et al. not disclose a method and an apparatus according to claimed further comprising the step of providing information to an operator of the bandwidth used.

Ennis Jr. et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of providing information to an operator of the bandwidth used ("to collect bandwidth utilization information for a data transmission system and analyze that information to advise an operator" correlates to the step of providing information to an operator of the bandwidth used ; column 3, lines 24 – 34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Amou et al. and Kawai et al. to include a method and an apparatus according to claimed further comprising the step of providing information to an operator of the bandwidth used such as that taught by Ennis Jr. et al. in order to monitor data transmission systems and display bandwidth utilization for the access channel or an individual transmission circuit over a predetermined time interval (as suggested by Ennis Jr. et al., see column 3, lines 13 – 15).

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1 – 18 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Bass et al. (US 695424 B1) disclose a system and method of moving information units from a network processor toward a data transmission network in a prioritized sequence which accommodates several different levels of service.
- Yazaki et al. (US 6920109 B2) disclose when a packet arrives at a shaping unit 500, a discard control unit 510 judges whether to "store" or "discard" the arrived packet. Packets judged to be "stored" are stored into a packet storage FIFO buffer 520 and sent out within a transmission bandwidth greater than the total sum of user-by-user minimum bandwidths.
- Abriru et al. (US 6839358 B2) disclose n a relaying apparatus comprising input side accommodating portions including input side queues, a plurality of output side accommodating portions including output side queues, and a switch fabric for mutually connecting the input side queues and the output side queues in a mesh form, in a time slot of a fixed period, the output side-addressed queue managers corresponding to the output side accommodating portions select a bandwidth guaranteed packet so as to guarantee a bandwidth, and output priority/non-priority signals for indicating which of the bandwidth guaranteed packet and a bandwidth non-guaranteed packet has been selected, and output demand signals of the packet.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Lee whose telephone number is (571) 272-3131. The examiner can normally be reached on Monday through Friday from 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew C. Lee/: <3/30/2007>

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